FY2012 Inspection

United States Environmental Protection Agency
Washington, D.C. 20460

Water Compliance Inspection Report

Section A: National Data System Coding (i.e., PCS)

Transaction Code	NPDES	yr/mo/day	Inspection Type	Inspector	Fac Type
1 N	ID R05C017	120906	~	R	2

Remarks

21 ____ 66

Inspection Work Days	Facility Self-Monitoring Evaluation Rating	BI	QA	Reserved
67 90 69	70 3	71 N	72 N	73 ____ 74 75 ____ 80

Section B: Facility Data

Name and Location of Facility Inspected *(For industrial users discharging to POTW, also include POTW name and NPDES permit number)*

Nu-West Industries, Inc. (a subsidiary of Agrium, Inc.), Rasmussen Ridge Mine
3826 Blackfoot River Road
Soda Springs, ID 83276

Entry Time/Date	Permit Effective Date
8:02 am/09-06-12	04-18-2009
Exit Time/Date	**Permit Expiration Date**
3:55 pm/09-06-12	09-28-2013

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)

Justin Skinner/Mine Technician/208-574-2080/ext. 1211
Frederick Partey/Environmental Engineering Specialist/208-574-2080/ext. 1207

Other Facility Data *(e.g., SIC NAICS, and other descriptive information)*

SIC # 1475
NAICS # 212392

Name, Address of Responsible Official/Title/Phone and Fax Number

Frederick Partey/Environmental Engineering Specialist
3010 Conda Road
Soda Springs, ID 83276
208-547-2080/ext. 1207

Contacted: ☑ Yes ☐ No

Section C: Areas Evaluated During Inspection *(Check only those areas evaluated)*

☑ Permit	☑ Self-Monitoring Program	☐ Pretreatment	☐ MS4
☑ **Records/Reports**	☑ Compliance Schedules	☐ Pollution Prevention	
☑ Facility Site Review	☐ Laboratory	☑ Storm Water	
☑ Effluent/Receiving Waters	☐ Operations & Maintenance	☐ Combined Sewer Overflow	
☐ Flow Measurement	☐ Sludge Handling/Disposal	☐ Sanitary Sewer Overflow	

Section D: Summary of Findings/Comments

(Attach additional sheets of narrative and checklists, including Single Event Violation codes, as necessary)

SEV Codes SEV Description

RECEIVED
APR - 8 2013
Inspection & Enforcement Management Unit
(IEMU)

Name(s) and Signature(s) of Inspector(s)	Agency/Office/Phone and Fax Numbers	Date
Patrick Stoll	EPA/R10/IEMU/IOO / 208-378-5772	09/18/12
Dave Tomten	EPA/R10/IOO / 208-378-5763	
Signature of Management Q A Reviewer	**Agency/Office/Phone and Fax Numbers**	**Date**
	EPA/OCE/IEMU 3-0855	4/10/13

EPA Form 3560-3 (Rev 1-06) Previous editions are obsolete.

ICIS (per ICDS)
9-18-2012 JB

National Pollutant Discharge Elimination System (NPDES)
Inspection Report

Nu-West Industries, Inc./Rasmussen Ridge Mine (DBA Agrium Conda Phosphate Operations) Soda Springs, Idaho

MSGP Tracking # IDR05C017

Inspection date: September 6, 2012
Report completion date: October 30, 2012

Prepared by:

Patrick Stoll
U.S. Environmental Protection Agency, Region 10
Office of Compliance and Enforcement
Inspection and Enforcement Management Unit
Idaho Operations Office

Table of Contents

I. Facility Information

Facility Name:	Nu-West Industries, Inc./ Rasmussen Ridge Mine (DBA Agrium Conda Phosphate Operations)
NPDES Tracking No.:	IDR05C017
	Effective date: April 18, 2009 Expiration date: September 29, 2013
Facility Contact(s):	Frederick Partey, Environmental Engineering Specialist Phone: (208) 547-2080, Ext. 1207 frederick.partey@agrium.com
	Justin Skinner, Mine Technician Phone: (208) 547-2080, Ext. 1211 justin.skinner@agrium.com
Facility Type:	Phosphate Rock Mining, SIC Code #1475
Facility Location:	3826 Blackfoot River Road Soda Springs, ID 83276
Mailing Address:	3010 Conda Road Soda Springs, ID 83276

II. Inspection Information

Inspection Date(s):	September 6, 2012
Inspector(s):	Patrick Stoll, Inspector (lead) EPA Region 10/OCE/IEMU/IOO (208) 378-5772
	Dave Tomten, Geologist EPA Region 10/IOO (208) 378-5763
Entry Time: Exit Time:	8:02 am 3:55 pm
Weather Conditions:	Clear, cool morning to cool, breezy, overcast afternoon.

Receiving Waters:	Tributaries of the Blackfoot River: South Fork Drainage (also referred to as "West Fork of Sheep Creek"), No Name Creek, Angus Creek, Rasmussen Creek, unnamed wetland.
Purpose:	Evaluate compliance status with respect to the facility's NPDES 2008 Multi-Sector General Permit and the Clean Water Act.

III. Inspection Entry

This inspection was conducted the day after an inspection at the adjacent South Rasmussen Mine operated by Monsanto/P4 Production, LLC. Access to the Rasmussen Ridge Mine (RRM) office required travel on some of the same shared mining haul roads that had required an escort during the previous day's inspection. For this reason, the inspection was announced and arrangements for an escort were made the afternoon before the inspection took place.

EPA Region 10/IOO geologist Dave Tomten and I arrived at the prearranged meeting place at 8:02 on the morning of September 6, 2012. We met with our escorts, RRM's Mine Technician Justin Skinner and Environmental Engineering Specialist Frederick Partey. Introductions were made, I presented my inspection credentials, and I briefly explained the purpose of our visit. We then followed our escorts to the RRM office. Upon arrival, I explained the purpose and scope of the inspection to Mr. Skinner and Dr. Partey in greater detail.

IV. Scope of Inspection

In general, this inspection was intended to evaluate the degree to which the RRM site was in compliance with the requirements of the Clean Water Act and the 2008 MSGP. In particular, the scope of the inspection included the following components:

1. An opening conference describing the purpose of the inspection.
2. An overview of the RRM operations presented by Mr. Skinner and Dr. Partey.
3. A detailed review of the RRM Stormwater Pollution Prevention Plan (SWPPP) including all site maps, plans, best management practices (BMPs) for controlling stormwater run on and runoff from the site, and site inspections.
4. An on the ground review of the entire RRM site with particular attention to an area along the South Rasmussen Drainage (also referred to as "West Fork of Sheep Creek") where discharges from the toe of an old mine dump had been observed and sampled on previous occasions (previous analysis indicated that the discharges often contained selenium in concentrations in excess of Idaho Water Quality Standards).

5. A closing meeting to summarize observations and issues noted during the inspection and to provide recommendations to facilitate future compliance with the applicable regulatory requirements.

V. Facility Background

The Nu-West Industries, Inc. RRM is an open pit phosphate mine located adjacent to P4 Production's South Rasmussen Mine, approximately 20 miles northeast of Soda Springs, Idaho. Operations at RRM ceased in early 2005, resuming again in 2011 (some pre-stripping work was performed in the northern part of the mine in 2008). Mining operations at RRM are contracted out to the Kiewet Mining Group. Kiewet employs approximately 135 individuals on-site; Nu-West directly employed 20 individuals at the time of this inspection.

Rasmussen Ridge is a major mine complex involving three large open pit mining areas commonly referred to as North, Central, and South Rasmussen (to avoid confusion, it should be noted that a haul road divides the Central Pit into the South Rasmussen Central Pit and the North Rasmussen Central Pit). The South Rasmussen area was originally owned by Rhone-Poulenc with operations beginning in 1991. Starting in 1995, the southern half of the Central Rasmussen area was also mined by Rhone-Poulenc. Nu-West took over mining operations of Rasmussen Ridge in 1998 and mined the northern half of the Central area. The Central area has since been mined out and will only be used for backfilling in the future. In 2003, a mine plan approved by the Department of Interior's Bureau of Land Management (BLM) provided Nu-West with the authorization to mine the North Rasmussen area (each of the mine areas has operated under its own separate mine plan). No actual processing of ore takes place at the mine site.

The North Rasmussen area is divided into Panel A and Panel B. While some work was conducted in Panel A in 2008 (primarily pre-stripping of overburden), actual production in did not begin in that area until early 2011. Mining in Panel B began in the third quarter of 2012. The North Rasmussen area is expected to remain productive until 2016.

Facility representatives present at the time of this inspection indicated that there are several potential receiving waters for any discharges from the site: No Name Creek (flowing between the South and Central areas); Rasmussen Creek and Angus Creek (flows along the haul road); and the South Rasmussen Drainage/West Fork Sheep Creek (a tributary of the Blackfoot River).

As noted previously, an on-going concern at the RRM has been the discharge of selenium-contaminated groundwater/mine water from the toe of an external mine dump located at the southern end of the mine complex. The discharge has been responsible for a number of seeps that flow into South Rasmussen Drainage below the dump. Beginning in 2002, Nu-West began installing a series of "stormwater retention

ponds" within the South Rasmussen Drainage to collect and manage the discharges from the dump as well as stormwater from adjacent surface areas (Ponds 1-5; Figure 3, page 15 and Photos 1-13, pages 16-22). In theory, the ponds were intended to serve as a mitigation measure designed to eliminate any unpermitted discharge to the waters of the United States. In 2005, Nu-West conducted sampling and analysis of the water in the South Rasmussen Drainage ponds in response to a 308 request from EPA. The detection of selenium at levels in excess of the Idaho Water Quality Standards prompted EPA to issue of a Notice of Violation (NOV) to Nu-West in February 2006. The NOV required Nu-West to conduct additional site sampling and analysis and to develop a plan to prevent any further discharges to South Rasmussen Drainage. During this inspection, Dave Tomten pointed out that it is a misnomer to refer to these ponds as "stormwater" ponds since they also use to collect and retain an industrial discharge; i.e., the discharge from the toe of the exterior dump.

Ponds 1-5 were constructed in series so that water flows from Pond 1 down to Pond 5 via discharge pipes installed in and through the bottom of the dams between each pond. When the valves installed on the discharge pipes are in the "open" position, gravity will cause water to flow from one pond to the next. In theory, water collected from the most downgradient of the ponds (Pond 5 - lined only on the upstream face of the dam) is pumped back to Pond 2. Any time the ponds approach the level of their design capacity (e.g., during periods of wet weather), water from Pond 2 can be pumped to a large pond located in the south end of the otherwise inactive Central Pit. The distance between Pond 2 and the Central Pit pond is just slightly over one mile. The capacity of the Central Pit pond has recently been increased with the installation of a new dam (see Photo 21). This increase in capacity is expected to accommodate the total capacity of any contaminated stormwater and/or mine water collected from the various locations around the site.

In previous years, overtopping of Pond 5 led to the discharge of contaminated stormwater/mine water into the South Rasmussen drainage. On-going sampling and analysis indicates that selenium levels in excess of the Idaho Water Quality Standards remain present Ponds 1-5 and in another pond (below Pond 5) that has a perennial discharge to South Rasmussen Drainage (the flow through Ponds 1-5 is intermittent). This pond, referred to at various times as the "Pre-Agrium Pond" or "Wendell's Pond" is located on BLM property but is not claimed by either P4 or Agrium. To insure that there is no bypass or discharge from Pond 5 in the future, the water level in Ponds 1-5 is inspected on a least a daily basis during wet weather/peak runoff periods (the presence of selenium in groundwater samples collected from a monitoring well below Pond 5 suggest that there may be an on-going alluvial discharge from this pond).

As noted previously, Nu-West took over operation of the RRM in the late 1990's. Once the Central area was mined out, Nu-West initiated the process that would allow operations to shift to the northern part of the RRM. As part of this process, Nu-West developed the North Rasmussen Ridge Supplemental Mine and Reclamation Plan (Plan). With some modifications, the Plan became the National Environmental Policy Act (NEPA) Environmental Impact Statement's (EIS) preferred alternative for the site;

implementation of the Plan was authorized by BLM. In 2008 BLM and the U.S. Forest Service (both agencies have land management responsibilities in the project area), required the development of a Supplemental Reclamation Action (SRA) to address the ongoing discharges from the toe of the mine dump. The SRA required additional monitoring (surface water, groundwater, and sediments) in the South Rasmussen Drainage area along with the implementation of a pilot project involving the installation of a geosynthetic clay liner (GCL) over a 23 acre portion of the exterior mine dump. In theory, the GCL would prevent the infiltration of meteoric water thereby cutting off the primary source of water responsible for the discharge from the seeps along the toe of the dump. The installation of the GCL was underway at the time of this inspection.

VI. Inspection Findings

VI.A. Stormwater Pollution Prevention Plan (SWPPP) Review

RRM maintains a relatively comprehensive SWPPP at the on-site mine office. For the most part, the document contained all the required SWPPP elements. All required inspections were conducted routinely, on-schedule, and well documented. There was some initial difficulty locating the most recent training documentation for 3 RRM employees who were responsible for conducting the inspections but the training records were located and the issue resolved before we left the site. The only issue that stood out with respect to the review of the SWPPP involved the following deficiencies associated with the site map:

- Lack of detail with respect to the direction of stormwater flow onto and across the site.
- Insufficient detail documenting the location of control measures for managing the flow of stormwater onto and across the site (e.g., the location of run-on diversions not identified on site map).
- Stormwater monitoring locations not identified.
- Insufficient detail with respect to impervious surfaces and fueling locations.

VI.B Annual Site Assessment Monitoring Results

As noted previously, Nu-West has been operating under a Supplemental Reclamation Action (SRA) administered jointly by BLM/USFS. Since 2008, the SRA has required Nu-West to conduct extensive monitoring and the development of an annual ***Existing Site Conditions Report*** (Report). A copy of the draft 2011 Report (the most recent) is included on a CD with this inspection report. Analytical results from the South Rasmussen Drainage area indicate that selenium continues to be present in the ponds at levels above the Idaho Water Quality Standards. This would support the conclusion that the exterior dump is continuing to discharge to the South Rasmussen Drainage (even though no surface discharge was noted at the time of this inspection).

VI.C. Site Tour

Upon completion of the SWPPP review, Mr. Skinner and Dr. Partey took Dave Tomten and me on a complete tour of the mine site (Dr. Partey was only present for the first hour of the tour). It should be noted that at the time of this inspection, the mine area had received no measurable precipitation in over two months. For this reason it was impossible to evaluate the performance of the many stormwater/contaminated mine water control measures that were in place at various locations around the facility. The control measures we did observe appeared to be well designed and suitable for their intended purpose.

There were no signs of seepage or discharge from the area at the toe of the external dump during our walking tour of the area around Ponds 1-5. The lack of observable discharge during a lengthy period of no measurable precipitation would seem to indicate that the GCL pilot project may indeed limit (if not stop) precipitation from infiltrating and seeping through the backfilled pit and reduce or eliminate future discharges from the toe of the dump.

After reviewing the area around Ponds 1-5 in the southern part of the RRM, we left Dr. Partey at the RRM office and continued our tour of the site accompanied by Mr. Skinner. During this part of the inspection we observed and/or inspected the following:

- The installation of the GCL from atop the exterior overburden dump (Photos 14-20).
- The Central Pit pond and the new downstream dam recently installed to increase the capacity of the pond (Photos 21).
- Top soil storage piles around the site.
- Backfilling in the Central Pit.
- Mining operations in the North RRM.
- Stormwater retention ponds along the mining haul road in areas above No Name Creek and South Rasmussen Drainage.
- The main fueling, maintenance, and equipment storage area.

VI.C. Sample Collection and/or Discharge Monitoring

Given the dry conditions at the RRM, there were no observable discharges from the site at the time of this inspection. No sample collection or monitoring was conducted.

As noted in Section VI.B, Nu-West has provided me with the most recent ***Existing Site Conditions Report***. This Report (CD included) provides extensive sampling and analytical data from an in-depth site assessment conducted by TRC (Nu-West's consultant) in 2011.

VII. Areas of Concern

The primary area of concern I noted during the course of this inspection involved the on-going discharge (reflected in the sampling and analytical results provided by Nu-West) from the toe of the external dump located in the southern portion of the mine site above South Fork Drainage. As stated in Section 2.2.1 of the 2008 MSGP:

1. ***Your discharge must be controlled as necessary to meet applicable water quality standards***. The sampling and analytical results provided by Nu-West suggest that the external dump in the southern portion of the RRM continues to discharge selenium-contaminated groundwater/mine water from the toe of the external dump to South Rasmussen Drainage (no actual discharge was observed at the time of this inspection).

The remaining areas of concern I noted during the course of this inspection were related to the SWPPP site map requirements outlined in Section 5.1.2 of the 2008 MSGP. Specifically, the following required elements were either missing from the site map or lacked sufficient detail:

2. ***The location and extent of significant structures and impervious surfaces***; the existing site map included a very small "Shop/Office" notation with a small arrow pointing to a general location; specific structures and impervious surfaces were not identified.
3. ***Directions of stormwater flow (use arrows)***; the existing site map included a small number of arrows that provide very limited information about the direction that contaminated stormwater was likely to flow in isolated areas at the facility; the map did not provide information about the general direction of stormwater flow across the site. RRM diverts some stormwater away from the active portions of the mine site but it is impossible to tell, from the map, where this water is coming from or where it is going in most cases.
4. ***Locations of all existing structural control measures***; Mr. Skinner and Dr. Partey explained that there are various structural control measures at the site to divert "clean" stormwater (run-on) from the active portions of the site; Mr. Skinner and Dr. Partey were both able to identify the general area on the site map where these structural controls were located but there was little, if anything, on the map itself to record or identify them.
5. ***Locations of all stormwater monitoring points***; no stormwater monitoring locations were identified on the map.
6. ***Locations of the following activities where such activities are exposed to precipitation: fueling stations, vehicle and equipment maintenance and/or cleaning areas…liquid storage tanks, processing and storage areas…transfer areas for substances in bulk, and machinery***; the only notation on the map relating to these activities was the small "Shop/Office" label noted previously in #1 above.

Note: A little more than two weeks after the inspection, I received a packet of material from Dr. Partey. The packet included a cover letter (a copy is included in Appendix B of this report) and updated SWPPP site maps. A notation on the maps indicates that they were updated on September 18, 2012. The new large scale maps addressed all the areas of concern noted above.

VIII. Closing Conference

Upon completion of the site tour, we returned to the RRM office where Dr. Partey joined us for a closing conference. During the conference, I shared the following comments and/or observations with Dr. Partey and Mr. Skinner:

1. Given the current dry conditions at the time of the inspection (no measurable rainfall in over two months) I noted that it was difficult to assess the effectiveness of the BMPs and structural control measures that were currently in place around the mine site. I stressed the importance of re-evaluating the BMPs and control measures during wet-weather conditions and the need to distribute the required quarterly visual assessments during seasons when precipitation runoff was actually occurring.
2. I stressed the importance of documenting all required training for the Pollution Prevention Team members (including those responsible for conducting the routine facility inspections outlined in the SWPPP) within the SWPPP itself or in a readily accessible companion document.
3. I summarized the items that were either missing from the SWPPP site map or lacked the expected level of detail.
4. I noted that our Agency would be closely monitoring the effectiveness of the GCL with particular attention to future selenium levels in South Rasmussen Drainage.

Upon conclusion of the closing conference, Dave and I thanked the Nu-West staff for their time and cooperation and left the site.

Nu-West Industries, Inc.
DBA Agrium Conda Phosphate Operations
Rasmussen Ridge Mine
Report Completion Date: 10/30/2012

Inspector:

Patrick Stoll, EPA/R10/IOO
Lead Inspector

Appendix A

Photo Log
(with Figures)

Nu-West Industries, Inc./Rasmussen Ridge Mine Photo Log

Inspection site or facility name:	Nu-West Industries, Inc./Rasmussen Ridge Mine (DBA Agrium Conda Phosphate Operations)
Physical Location:	3826 Blackfoot River Road Soda Springs, Idaho 83276
NPDES ID #:	2008 MSGP Tracking # IDR05C017
Type of Inspection:	2008 MSGP Stormwater Compliance Evaluation Inspection
Date of Inspection:	September 6, 2012
Inspector(s):	Patrick Stoll, Dave Tomten; EPA Region 10
Image capture device:	Richo Caplio 500SE
Media type and location where original/archived images are stored:	NW_RsRdg_9-6-12 NW_RsRdg_photos, folder
Original file type, pixel dimensions, and file #s, (assigned by camera):	JPG; 3264 x 2448 pixels; Image numbers R0011467 through R0011523
Folder name for resized images and pixel dimensions (for use in Photo Log):	NW_RsRdg-800x600
Photo Log Image ID #s:	Images numbered: 1-27
Digital images recorded by:	Patrick Stoll unless otherwise noted
Drainage/flow direction:	

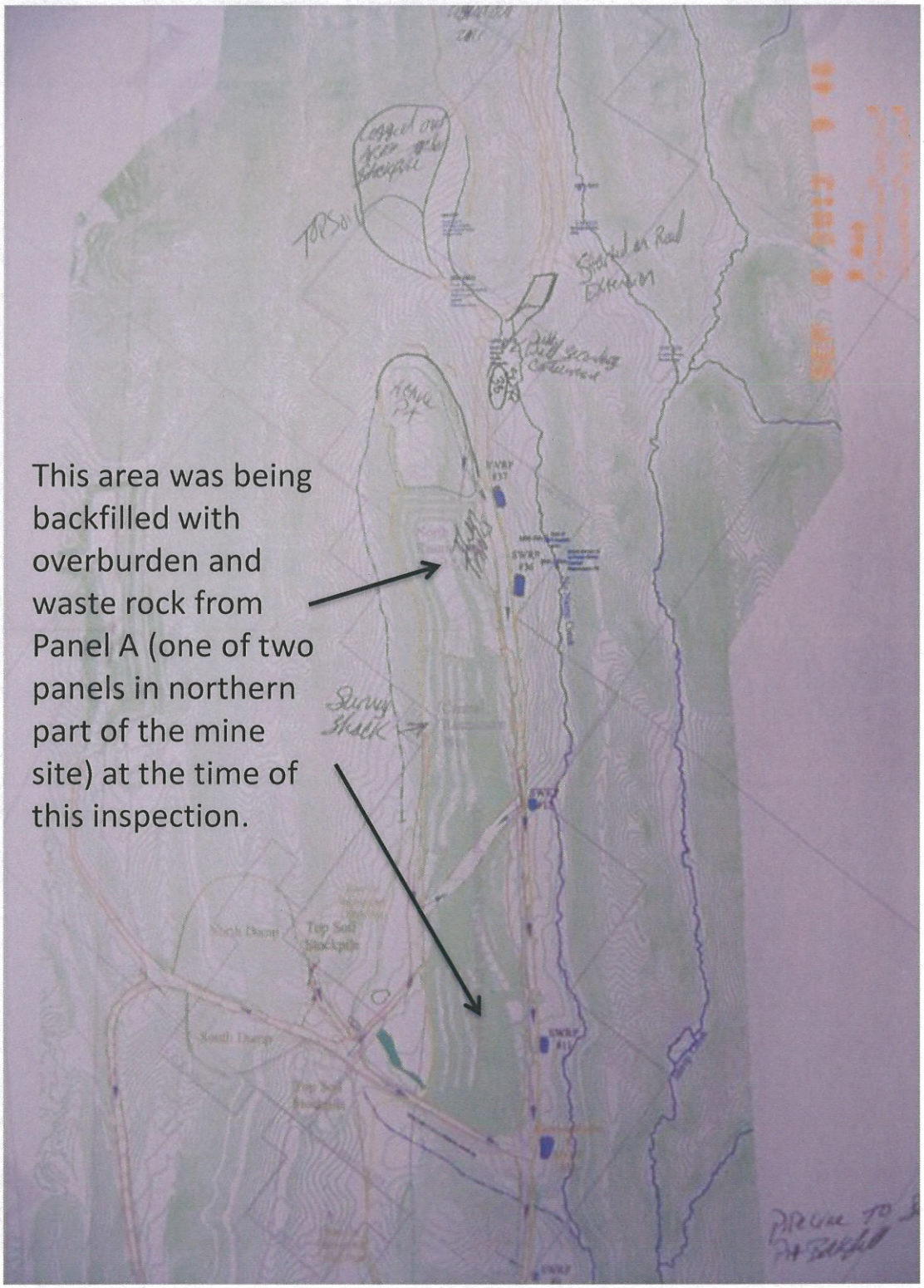


Figure 1
Southern portion of the "Rasmussen Ridge Mine" including the northern portion of the Central Pit and the lower end of Panel A (from the SWPPP site map in use at time of the inspection).

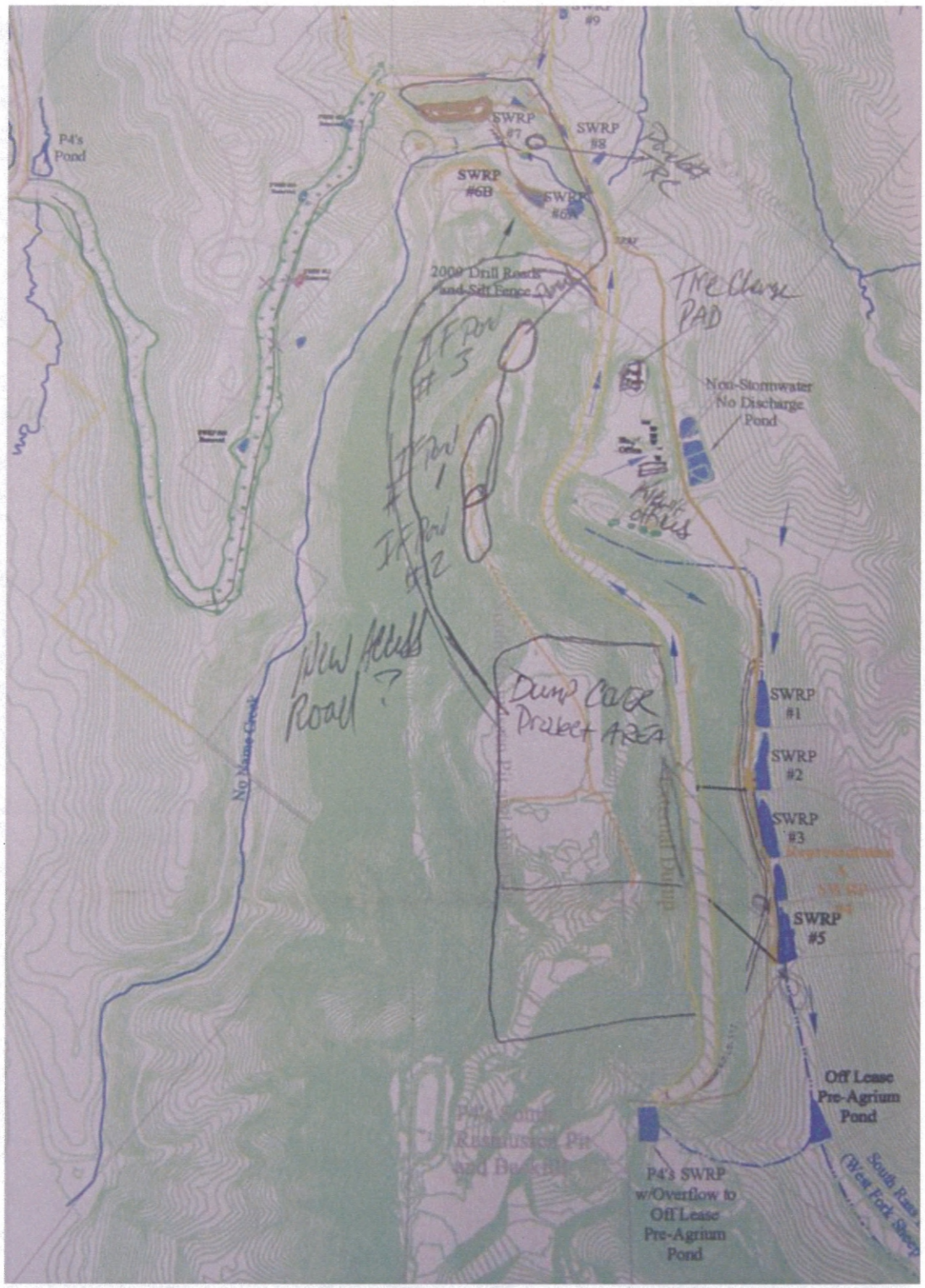


Figure 2
Details from the SWPPP site map in use at the time of this inspection.

Figure No. 3
Google Earth photo with some mine features identified. Image date: 8/19/2010.

Photo No. 1 (R0011488)
Stormwater/mine water retention ponds in South Rasmussen Drainage (east of and below the external overburden dump); Pond 5 is out-of-view.

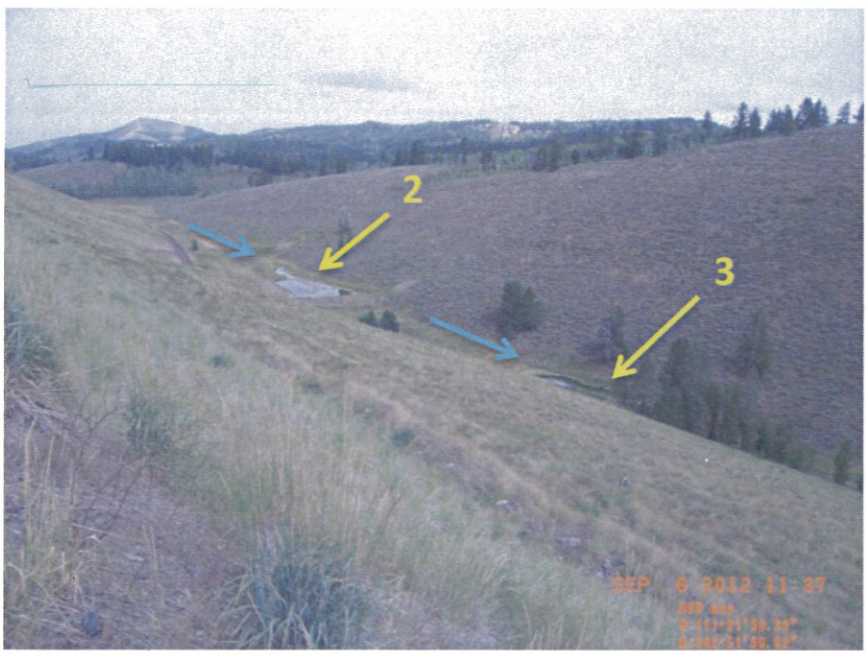


Photo No. 2 (R0011489)
Stormwater/mine water retention ponds in South Rasmussen Drainage (east of and below the external overburden dump); Ponds 2 and 3.

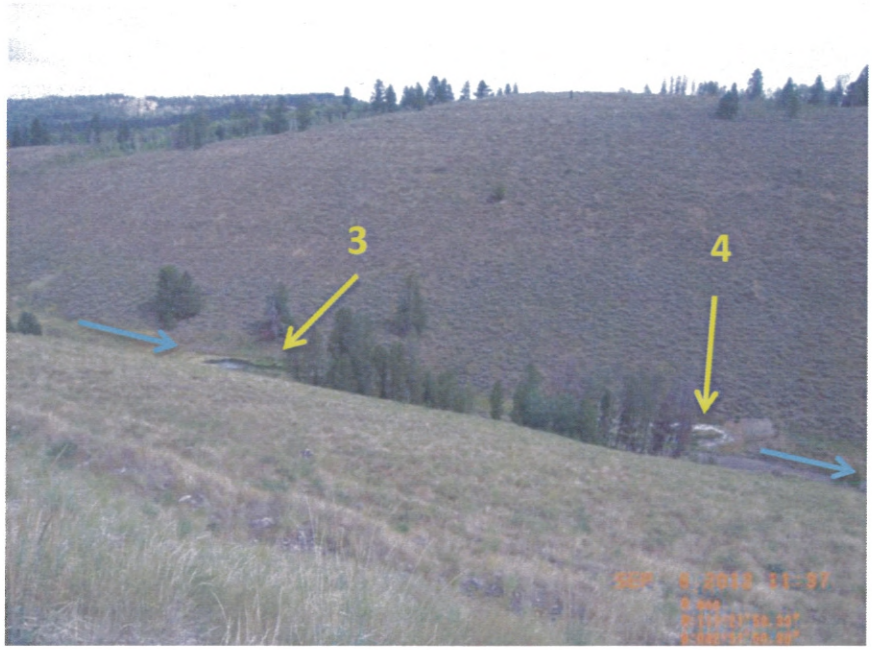


Photo No. 3 (R0011490)
Stormwater/mine water retention ponds in South Rasmussen Drainage
(east of and below the external overburden dump); Ponds 3 and 4.

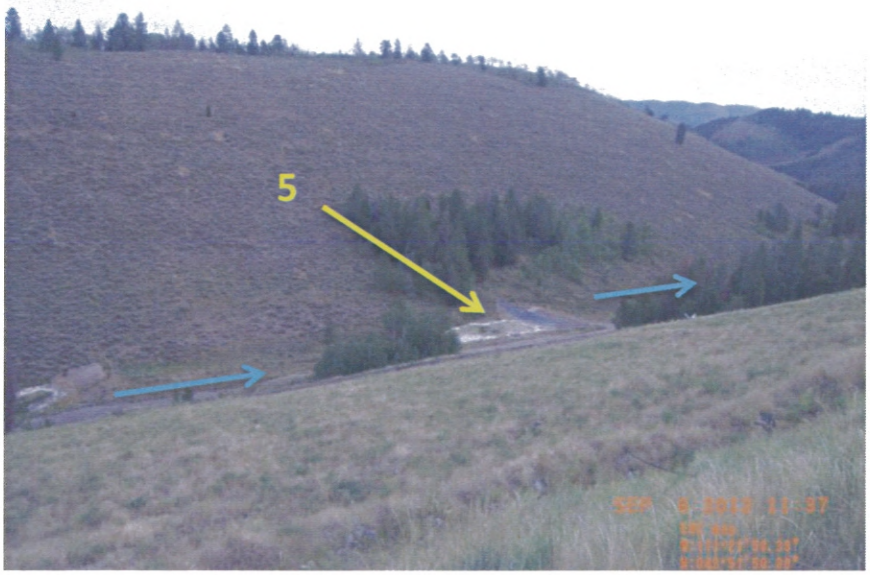


Photo No. 4(R0011492)
Stormwater/mine water retention ponds in South Rasmussen Drainage
(east of and below the external overburden dump); Pond 5.

Photo No. 5 (R0011475)
Monitoring well below Pond 5 in South Rasmussen Drainage. The presence of selenium in groundwater samples collected from this well in 2011 suggest there may be an alluvial discharge from Pond 5 or above.

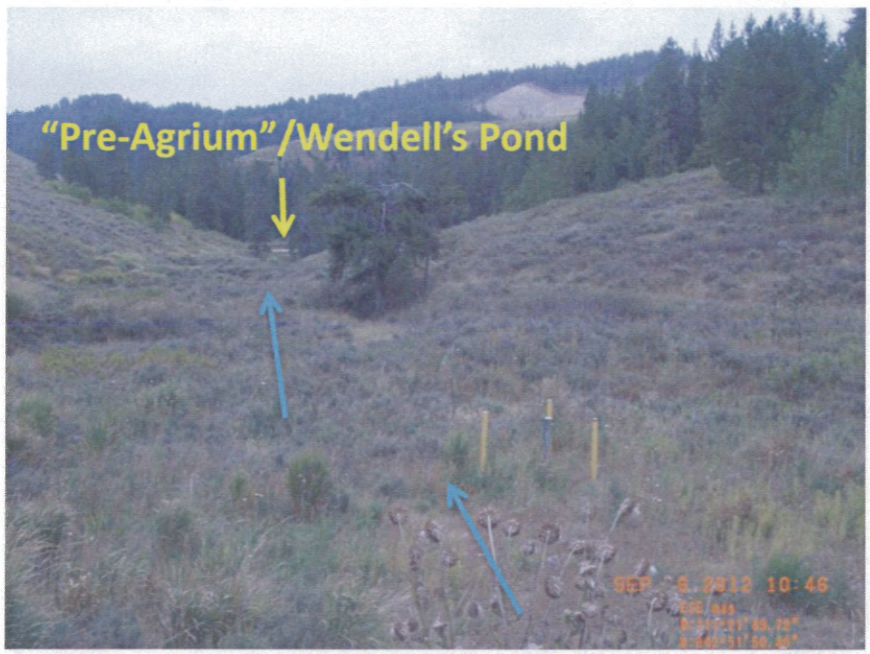


Photo No. 6 (R0011481)
Piezometer below Pond 5; "Pre-Agrium"/Wendell's Pond in background. Selenium levels above the Idaho Water Quality Standards were detected in water samples from the Pre-Agrium Pond in 2011.

Photo No. 7 (R0011477)
South Rasmussen Drainage; upstream side of Pond 5 dam; lined on face only.

Photo No. 8 (R0011478)
South Rasmussen Drainage; downstream side of Pond 5 dam.

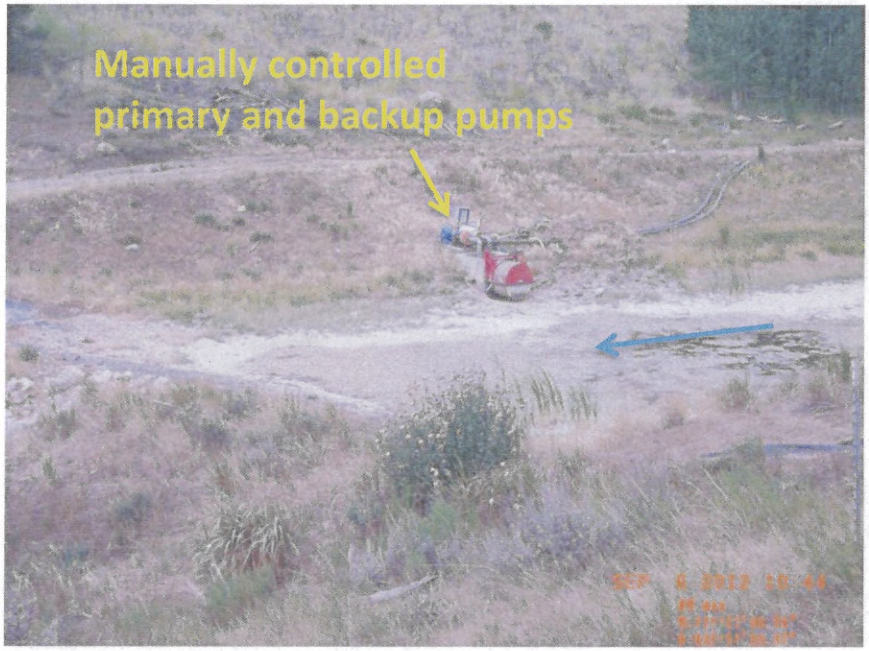


Photo No. 9 (R0011479)
South Rasmussen Drainage; Pond 5. Pumps are used to pump water from Pond 5 to Pond 2 when necessary.

Photo No. 10 (R0011482)
South Rasmussen Drainage; Pond 4 (on left) and Pond 5.

Photo No. 11 (R0011483)
South Rasmussen Drainage; dam between Pond 2 (on left) and Pond 3.

Photo No. 12 (R0011485)
South Rasmussen Drainage; manually operated pumps used to transfer water from Pond 2 to the Central Pit Pond.

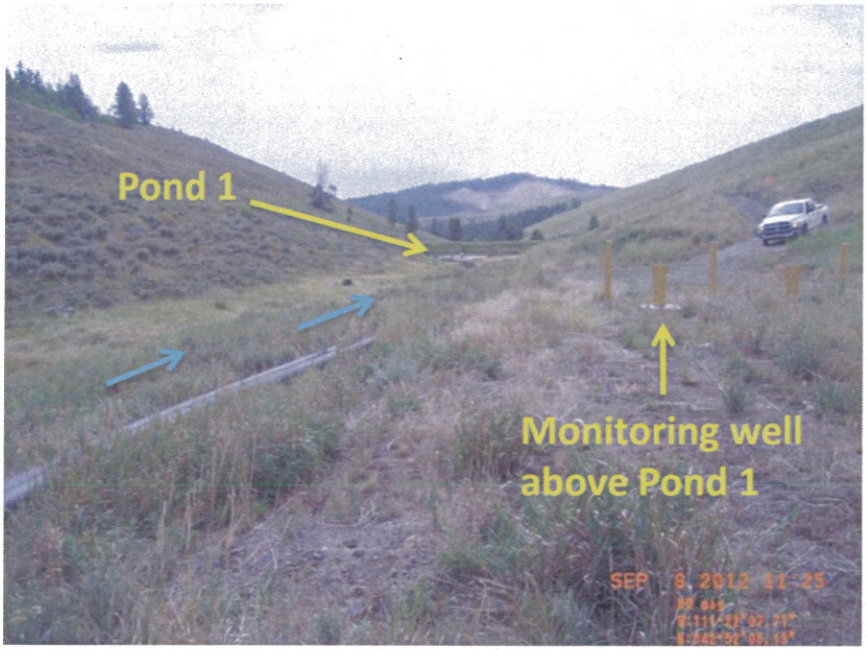


Photo No. 13 (R0011487)
South Rasmussen Drainage; monitoring well above Pond 1.

Photo No. 14 (R0011494)
Haul road along the base of the external dump. The smooth, graded soil on the slope has been prepped for the installation of the geosynthetic clay liner (GCL) pilot project.

Photo No. 15 (R0011496)
South Rasmussen external dump cover pilot project; installation of the GCL.

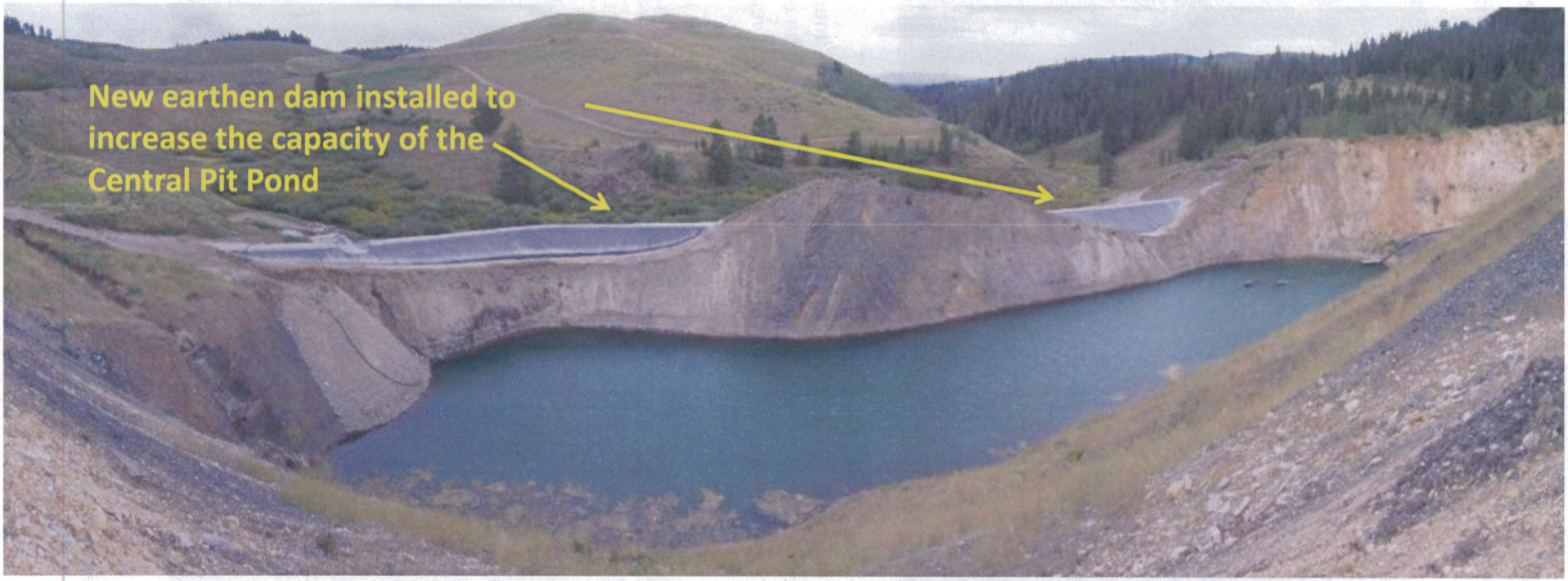
Photo No. 16 (R0011501)
South Rasmussen external dump cover pilot project; detailed look at the GCL.

Photo No. 17 (R0011504)
South Rasmussen external dump cover pilot project; reviewing the design plans for the installation of the GCL.

Photo No. 18 (R0011506)
South Rasmussen external dump cover pilot project and the installation of the above-liner stormwater collection system. All stormwater collected from the dump surface will drain to a culvert passing under the haul road with discharge to Pond 5. If regulated constituents are below Idaho Water Quality Standards, the water will then be discharged to the South Rasmussen drainage.

Photo No. 19 (R0011507)
South Rasmussen external dump cover pilot project and the installation of the liner and the above-liner stormwater collection system. As part of the pilot project, half of the liner will be covered with washed gravel and half with larger angular rock before final placement of the soil and vegetative cover cap.

Photo No. 20 (R0011508)
South Rasmussen external dump cover pilot project; the key trench used to anchor the top of the GCL.



Photos No. 21 (Panoramic from photos R0011511-R0011514
The Central Pit Pond. Earth dams with an HDPE cover
were installed to increase the capacity of the pond.

Photo No. 22 (R0011519)
Backfill from Panels A and B from of the currently active north section of the mine is being placed in northern part of the Central pit (view to the north).

Photo No. 23 (R0011520)
Backfill from Panels A and B from of the currently active north section of the mine is being placed in northern part of the Central pit (view to the south).

Photo No. 24 (R0011522)
Numerous ponds for collecting stormwater are located along the haul roads throughout the RRM. This culvert discharges to Pond 9, located on the east side of the haul road near the south end of the Central Pit.

Photo No. 25 (R0011523)
Stormwater collection Pond 9.

Photo No. 26 (R0011499)
One of the fuel and chemical storage area at the shop/office complex.

Photo No. 27 (R0011500)
One of the fuel and chemical storage area at the shop/office complex.

Appendix B

Documents Provided by Nu-West After Inspections

Agrium Conda Phosphate Operations*
3010 Conda Road
Soda Springs, ID 83276
Tel: 208-547-4381
Fax: 208-547-2550

October 4, 2012

File No.: MI-12-029

Mr. Patrick (Pat) Stoll
Inspection and Enforcement Unit
U.S. EPA Region 10, Idaho Operations Office
950 W. Bannock St., Suite 900
Boise, ID 83702

Re: North Rasmussen Ridge Mine – EPA Inspection September 6, 2012
South Rasmussen Ridge Mine Data Reports

Dear Mr. Stoll,

Previously, Nu-West Industries, Inc. (Nu-West), dba as Agrium Conda Phosphate Operations submitted a letter to you dated September 21, 2012 which stated that Nu-West would submit additional data that are being collected at the South Rasmussen Ridge Mine as part of a Supplement Reclamation Action. As requested, Nu-West is submitting the following documents on disc:

- DRAFT Existing Site Conditions Report (ESCR), May 2011
- DRAFT 2011 Data Summary Report (DSR), February 2012

The ESCR contains data from the years 2008 through 2010 and the DSR contains 2011 data. Nu-West is currently collecting data in 2012 and these data will be available after the first of the year after the data have been verified and reviewed in accordance with the Quality Assurance Project Plan.

If you have any questions please call me at 208-574-2080 x 1207.

Sincerely,

Frederick Partey
Environmental Engineering Specialist/Supervisor

* A Registered Name of Nu-West Industries, Inc.

EXECUTIVE SUMMARY

Nu-West Industries, Inc. and Nu-West Mining. Inc. (jointly Nu-West), prepared this Existing Site Conditions Report (ESCR) for the South Rasmussen Ridge Mine. This ESCR is being submitted as requested in a letter titled *Additional Reclamation Activities Directed, Plan Required Within 30-Days* from the USFS and the BLM dated April 15, 2008 to conduct a Supplemental Reclamation Action (SRA). As requested by the BLM/USFS, the intent of the SRA was to conduct a comprehensive investigation that follows the procedures outlined in the National Contingency Plan (NCP). In accordance with the NCP, the investigations and reporting were based on the scope and detail as provided in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988). All the field work was completed in accordance with BLM approved sampling and analysis plans and quality assurance project plans.

The purpose of the SRA is to define the nature and extent of the contamination at the Site and to identify the most appropriate remedial technologies as part of the remedy. This report compiles and analyzes the data from the investigations that were conducted over a three year period which were started in 2008 and completed in 2010.

Key features at the Site include the South Dump, the Luxor Dump, and the Central Pit and several other areas. Mining at the Site began in 1991 by Rhone-Poulenc when they open the south pit. The South Dump was backfilled and reclaimed by 2001. Rhone-Poulenc initiated mining in the Central Pit in 1997 and partially backfilled in 2003 and 2004 by Nu-West when the Luxor Dump was completed.

There are two intermittent streams that are in the project area, No Name Creek and South Rasmussen Drainage. Flows in both creeks exhibited a snowmelt hydrograph typical of intermittent drainages. Flows are the result of precipitation, mostly in the form of snow that accumulates at the Site. Typically, flow begins in mid- to late April and peaks in early May. Flow quickly recedes and both creeks are usually dry in July. There is a pump back system in South Rasmussen Drainage that prevents surface water from flowing off site. Seeps and springs flow in both drainages. The highest flow rates occur in late April and early May, and then they quickly decreased in subsequent samplings. Several springs were dry by late June.

Surface water quality criteria standards were calculated using Idaho Surface Water Quality Standards and the average hardness at each sampling location. Surface water concentrations at the upstream control site in No Name Creek (NNC-1) were generally low and did not exceed the water quality standards. Constituent concentrations increased at the three downstream stations; the largest increases were noted at stations NNC-2 and NNC-3. The water quality standards for dissolved cadmium and selenium were exceeded on several occasions at these two stations. Concentrations of all constituents were almost identical between station NNC-2 and NNC-3, indicating there are no additional sources between these two sites. Selenium loads were generally low, usually less than 0.20 lbs/day when there was flow, except for a few days a year.

Several surface water constituent concentrations in the South Rasmussen Drainage were elevated above water quality standards. Concentrations were elevated at station SRD-1 then decreased at the downstream station SRD-2. Concentrations then increased further downstream at SRD-3. The water quality standard for dissolved and total cadmium, nickel and selenium were exceeded. Selenium loads were general low, less than 1.0 lbs/day, when there was flow except for a few days each year.

Numerous soil samples were collected from the Site and statistical analyses were performed to determine if concentrations in the reclaimed areas exceeded background values. The metals that were commonly elevated above background were cadmium, chromium, nickel, selenium and zinc. It was not uncommon for one or two samples from an area to contain elevated concentrations and the remaining samples to be low.

Groundwater samples were collected from 13 wells and piezometers throughout the Site and were completed in different formations: the No Name Creek alluvium (wells MW-2, MW-3, MW-NA-1), the SRD alluvium (MW-4, PZ-1, PZ-2, MW-6, and MW-7), Dinwoody Formation (MW-5, MWBR-3 and MW-ND16), Wells Formation (MW-BR-2), and the Cherty Shale Member (Rass Shop Well). Groundwater results were compared to the Idaho Ground Water Quality Standards (IGWQS).

In the No Name Creek alluvium, the Wells Formation, the Dinwoody Formation, and the Cherty Shale Member, no dissolved metals, including selenium, were detected above IGWQS. In the South Rasmussen Drainage alluvium, dissolved selenium was frequently detected above the IGWQS in several wells. Dissolved arsenic was occasionally detected IGWQS in several wells. No other concentrations of dissolved metals exceeded the IGWQS in any of the other sampling events.

There are two potential source areas of constituents of concern at the site: the South Dump and the Luxor Dump. Both these potential sources areas contain center waste shale, which weathers and releases constituents, particularly selenium, to the environment.

Elevated concentrations of dissolved selenium above standards have been detected in the surface water in the South Rasmussen Drainage and No Name Creek. Both creeks only flow intermittently and have low loads. Selenium above groundwater standards was detected only in the alluvium of the South Rasmussen Drainage. Dissolved selenium above standards was not detected in any other groundwater formation.

The constituents that have been measured in the surface and groundwater are primarily from the South Dump. The Luxor Dump is contributing only minor amounts of selenium and other constituents. Because of the way the Luxor Dump was reclaimed and because it is in the Central Pit, it has limited flow paths to No Name Creek.

6.0 SUMMARY AND CONCLUSIONS

TRC, on behalf of Nu-West, prepared this ESCR for the South Rasmussen Ridge Mine. This ESCR is being submitted as requested in a letter titled *Additional Reclamation Activities Directed, Plan Required Within 30-Days* from the USFS and the BLM to Nu-West, dated April 15, 2008 (BLM Letter, 2008).

The purpose of these investigations and the Supplemental Reclamation Action (SRA) project is to evaluate the nature and extent of the contamination and to identify the most appropriate alternative approaches for addressing such contamination. Work Plans associated with the project were based on the scope and detail provided in *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA* (USEPA, 1988).

The scope of this ESCR includes details of the field investigations and sampling the following media: surface water and groundwater, soil and sediment, vegetation, biota and waste rock in the disposal areas. These results were used to define the nature and extent of impacted media at the Site, and will be used to identify effective and feasible remedial technologies for the Site.

6.1 RESULTS SUMMARY

Site investigations for the ESCR were initiated in 2008 with a surface water monitoring program. In 2009, an extensive investigation was initiated during which all media of interest were sampled and analyzed for COPCs. The 2008 and 2009 data were reviewed and a data-gap analysis was completed. Based on that analysis, an additional investigation was completed in 2010. All field work was completed in accordance with BLM approved sampling and analysis plans and QAPPs.

6.1.1 *Surface Water*

The two streams that flow through the Site are No Name Creek and South Rasmussen Drainage. There are no known users of the surface water or groundwater on the Site or in the immediate vicinity. No fisheries have been identified in No Name Creek or South Rasmussen Drainage. The designated surface water uses include irrigation and stock watering. No Name Creek is currently classified by the state as a cold water aquatic life stream and primary or secondary contact recreation criteria area (IDAPA 58.01.02.101.10.a).

Flows in the No Name Creek and South Rasmussen Drainage exhibit a snowmelt hydrograph typical of an intermittent drainage. Flows are the result of precipitation, mostly in the form of snow that accumulates at the Site. The average annual precipitation at the nearby Somsen SNOTEL station is about 27 inches, approximately half in the form of snow. Typically, flow begins in mid- to late-April and peaks in early May. Flow quickly recedes and both creeks are usually dry in July; flows usually last for less than three months each year. Flows in South Rasmussen Drainage are similar to No Name Creek, except flows are generally lower. The water management system impacts the measured flows at SRD-3 and SRD-4 by reducing the amount of water reaching these stations. The pump-back system prevents surface water in South Rasmussen Drainage from flowing off site. Five stormwater retention ponds (SWRPs) are used to manage the surface water in the drainage. The pump-back system uses a series of pumps to move the storm water from the ponds to the south end of the Central Pit.

There are several low-flow springs and seeps in both drainages. Flows typically are highest in late April and early May, and then quickly decreased in subsequent samplings. Several springs are dry by late June.

Constituent concentrations at the upstream control site in No Name Creek (NNC-1) were generally low. None of the surface water quality criteria standards were exceeded at this station. Constituent concentrations increased at the three downstream stations; the largest increases were noted at NNC-2 and NNC-3. The surface water quality standards for dissolved cadmium and dissolved selenium were exceeded on several occasions. The surface water quality standards for total cadmium, selenium and zinc were exceeded on several occasions. The high total suspended solids and acid preservation of the samples in the field may have increased the total analyte

concentrations. Concentrations of all constituents were almost identical between station NNC-2 and NNC-3, indicating there are no additional sources between these two stations. Selenium loads were generally low, usually less than 0.20 lbs/day when there was flow, except for a few days a year.

Surface water concentrations dissolved and total cadmium, nickel and selenium in South Rasmussen Drainage were elevated above water quality standards. Concentrations were elevated at SRD-1 then decreased at the downstream station SRD-2. Concentrations then increased further downstream at SRD-3. The surface water quality standards for these analytes were commonly exceeded at all three stations. Selenium loads were generally low, less than 1.0 lb/day, when there was flow, except for a few days each year.

A water balance for the Central Pit was conducted to determine the source of the free-standing water in the pit. The water balance investigation demonstrated that water from meteoric sources accounted for a vast majority of the free-standing water and the saturated backfill material.

6.1.2 *Soil and Sediment*

Most of the soils at the Site were disturbed during mining activities and haul road construction. Where feasible, the topsoil was stripped before mining and then re-used during reclamation. A soil survey is currently being conducted for Caribou County by the National Resource Conservation Service. Sediment is present in the No Name Creek channel, South Rasmussen Drainage, and the SWRPs in South Rasmussen Drainage. In general, fined-grained sediments were present in both channels and the ponds. In some locations, courser materials consisting of sand and gravel were observed.

Soil/sediment transects consisting of five sampling points (four soil and one sediment) were collected across No Name Creek and South Rasmussen Drainage, and from the five SWRPs in the South Rasmussen Drainage. Samples were collected from 0 to 6 inches..

Metal concentrations in the sediment/soil transects in No Name Creek were slightly elevated in samples collected near and downstream of the South Dump and the Luxor Dump. Further downstream, the concentrations decreased. Metal concentrations in South Rasmussen Drainage and the five SWRPs were elevated. The highest concentrations in the channel sediments were observed in the headwater of the drainage. SWRP-2 contained the highest concentrations. In general, the sediment samples collected from the channel had higher metal concentrations compared to the adjacent soil samples.

Numerous soil samples were collected around the Site, including background locations. Statistical analyses were performed to determine if concentrations in the reclaimed areas exceeded background values. Results show that the South Dump had the following metals above background: antimony, boron, cadmium, chromium, molybdenum, nickel, selenium, uranium, vanadium, and zinc. All of the samples containing the highest metal concentrations were located either on the southern portion of the South Dump or adjacent to the main haul road. The highest selenium concentration (87.5 mg/kg) in soils was from SS-22 located in the southeast portion of the dump in an area with black shale.

Elevated metal concentrations were also measured in the soils of the Luxor Dump, the North and South Growth Media Storage Areas, the North and South Dump Reclamation Areas, the South Rasmussen Drainage, and the No Name Creek drainage. The metals that were commonly elevated above background were cadmium, chromium, nickel, selenium and zinc. Usually one or two samples from an area contained elevated concentrations high enough to cause the entire area to fail the statistical test.

6.1.3 *Groundwater*

In general, there are three groundwater systems at the Site: an upper shallow groundwater system in the alluvium, a shallow local to intermediate groundwater systems in the Rex Chert and Upper Meade Peak members of the Phosphoria Formation, and a deeper regional groundwater flow system in the underlying Wells Formation. Shales of the Meade Peak Member act as a leaky barrier which separates intermediate and deep groundwater systems.

Major hydrostratigraphic units in the project area consist of alluvial deposits associated with No Name Creek, South Rasmussen Drainage, the Dinwoody Formation, the Phosphoria Formation, and the Wells Formation. A number of studies have described the general hydrostratigraphy of the southeastern phosphate area. In general, these sources have concluded that the Wells and Dinwoody formations are aquifers, while the Meade Peak Member and the Chert Shale Members of the Phosphoria Formation is a leaky confining unit. The Rex Chert Member of the Phosphoria Formation may also be an aquifer locally. Alluvium and colluvium overlie the valleys and lower slopes of the ridges at the Site. The colluvium consists mainly of locally derived cobbles, pebbles, and finer-grained soils that accumulate along the northeastern and southwestern lower slopes of the Site. The alluvium consists of sand, silt, and clay with some rounded cobbles and pebbles, and is found mainly along stream and drainage valleys.

Groundwater volumes are limited in two of the three alluvial wells in the No Name Creek drainage. MW-2 was dry in the fall and only two of the six scheduled samples were collected. No samples were collected from MW-3 because it was dry the entire time. In MW-2, there were no dissolved metals detected above IGWQS. Total aluminum, total iron, and total manganese were detected above the IGWQS at MW-NA1 during all six sampling events. The elevated total suspended solids values (10-328 mg/L) in MW-NA1 likely contributed to the elevated levels of total metals as a result of metals leached by the acidic preservative in the samples adsorbing to the suspended solids.

In MW-2 there were no dissolved metals detected above IGWQS. MW-2 had concentrations of total aluminum, total iron and total manganese above the IGWQS. The TSS values in MW-2 likely affected the elevated levels of total iron, lead, and manganese. Total or dissolved selenium was not detected above the IGWQS at either well during the monitoring period.

In general, the well and the piezometer MW-4 and PZ-1, in the headwater of the South Rasmussen Drainage, had lower concentrations of constituents than the down-gradient wells. Constituent concentrations increased in the downstream wells PZ-2 and MW-7. There also was a slight increase in most constituents at MW-6; however, the increase was not as great when compared to the concentrations at PZ-2 and MW-7. MW-6 was completed on the hillside above the main channel of the drainage. MW-6 may be more representative of the groundwater in the colluvium below the South Dump than it is the alluvium groundwater in the channel.

Dissolved constituents typically were below the IGWGS in wells MW-4 and PZ-1. Dissolved aluminum and dissolved manganese were detected in MW-4 above the IGWQS during one sampling event. No other concentrations of dissolved metals exceeded the IGWQS in any of the other five sampling events. Total aluminum, iron and manganese frequently exceeded the IGWQS. The elevated TSS values in MW-4 and PZ-1 likely affected the elevated levels of total iron, lead, and manganese due the acid-preservation method.

In PZ-2, downgradient of MW-4/PZ-1, dissolved arsenic was detected above the IGWQS in one sampling event. Dissolved selenium was detected above the IGWQS in all four sampling events. No other concentrations of dissolved metals exceeded the IGWQS in any of the other sampling events.

PZ-2 had concentrations of total aluminum, arsenic, iron, manganese, selenium and thallium exceeding the IGWQS. The elevated TSS values in PZ-2 likely affected the elevated levels of total metals due the acidic-preservation method employed in the field Dissolved selenium was detected above the IGWQS in all four sampling events and dissolved arsenic was detected above the IGWQS in one sampling event. No other concentrations of dissolved metals exceeded the IGWQS in any of the sampling events.
MW-7 had concentrations of total aluminum, beryllium, manganese, iron and selenium exceeding the IGWQS in one or more sampling events. Dissolved concentrations of manganese and selenium were detected in MW-7 above the IGWQS in all six sampling events.

In the Dinwoody Formation wells, there were no dissolved concentrations above the IGWQS for any of the constituents throughout the sampling period. Concentrations of total aluminum, total iron, and total manganese were detected above the IGWQS during several monitoring events; the acidic preservation technique may be impacting these results.

Five samples were collected from MW-BR-2, completed in the Wells Formation. There were no dissolved

concentrations above the IGWQS for any of the constituents throughout the sampling period. Total aluminum, iron and manganese exceeded the IGWQS in all 5 sampling events. TSS values and the acidic-preservation technique most likely contributed to the elevated levels of these three constituents.

Three samples were collected from the Rass Shop Well, completed in the Cherty Member. There were no dissolved concentrations above the IGWQS for any of the constituents in the shop well throughout the sampling period. Total iron was the only constituent on the groundwater parameter list detected above IGWQS.

6.1.4 *South Dump*

Six boreholes (BH-1 through BH-6) were advanced into the South Dump using a sonic drill rig. All boreholes were drilled through the ROM waste and 5 feet into the top of native ground surface, except for BH-1, which was completed just above native ground. Continuous core samples were collected for the entire length of the boreholes and twelve samples were selected for detailed analysis from the six boreholes.

In general, most of the waste rock in the South Dump consists gravel in a silt and/or clay matrix. Some layers of fine to coarse sand are present, but they are neither extensive nor continuous. Some of the core was damp to wet, but free standing water was encountered only in BH-1 during drilling. Free water was not encountered in the other boreholes during drilling. BH-1 is located near the deepest portion of the former south pit and water tends to accumulate in this area. Three other boreholes completed in the eastern flank external dump contained water in the piezometer after they were installed.

Borehole BH-1 had the highest concentrations of metals, including total aluminum, cadmium, chromium, iron, lead, manganese, selenium, and zinc. Three of these metals were also elevated in the dissolved phase: cadmium, iron, and manganese; dissolved selenium was low. The high TSS value (1,500 mg/L) in BH-1 most likely contributed to the elevated levels of total metals as a result of the acidic–preservative in the samples.

BH-3 detected elevated concentrations of total aluminum, iron, lead, and manganese. Iron and manganese were the only dissolved-phase constituents with elevated concentrations. Similar to BH-1, the high TSS value (590 mg/L) in BH-3 most likely contributed to the elevated levels of total metals.

BH-4, completed in the alluvium, contained elevated concentrations of total aluminum, iron, and manganese. Manganese was the only elevated dissolved phase constituent.

BH-6 detected elevated concentrations of total aluminum, iron, manganese, and selenium. Selenium and manganese were the only elevated dissolved-phase constituents detected in BH-6.

6.1.5 *Biological*

Biological samples of vegetation, aquatic and terrestrial invertebrates, and small mammals were collected to characterize the Site. Only aboveground vegetation was collected. For shrub and woody species, plant parts collected were limited to the current year's growth. The species and location of each plant sampled were recorded. Terrestrial invertebrate (e.g., insects, millipedes, etc.) samples were collected from 21 locations across the Site. Generally, the terrestrial invertebrate sampling locations were co-located with select soil and vegetation sampling locations. Aquatic invertebrate samples were collected from No Name Creek and South Rasmussen Drainage. Small mammal samples were collected across the Site at locations that were generally co-located with select terrestrial invertebrate sampling locations.

A statistical analysis of the biological results was performed for the vegetation, terrestrial invertebrates, aquatic invertebrates and small mammals. In the vegetation on the South Dump, selenium and chromium were statistically elevated above background. Selenium, cadmium, chromium and vanadium were elevated on the Luxor dump. The North and South Dump Reclamation Areas/Media Storage Areas had elevated concentrations of chromium and vanadium. The No Name Creek Drainage contained elevated levels of selenium and vanadium. South Rasmussen Drainage contained elevated levels of chromium, selenium and vanadium.

A statistical analysis of the terrestrial invertebrates showed that selenium and zinc were statistically elevated on

the South Dump and selenium was elevated in South Rasmussen Drainage. Statistical tests could not be conducted on any constituents at the Luxor Dump and the Dump Storage Areas/Media Storage Areas because of insufficient sample size. The results were compared to a value three times higher than the background sample mean to preliminarily identify metals of potential concern. At the Luxor Dump and the Dump Storage Areas/Media Storage Areas, selenium was the only constituent that was elevated three times higher than background.

The sample size for aquatic invertebrate samples was insufficient to make a statistical comparison. As with the terrestrial invertebrates, the sample mean concentrations for each site were compared to a value three times higher than the background sample mean to preliminarily identify metals of potential concern. Compared to aquatic invertebrates from the background sampling area, aquatic invertebrates from both No Name Creek and South Rasmussen Drainage contained elevated concentrations of chromium, cobalt, iron, manganese, selenium, and uranium. Aquatic invertebrates from No Name Creek also showed elevated concentrations of arsenic, beryllium, nickel, thallium, and vanadium. Sample NNC-T2-AQ, collected from the southern portion of No Name Creek, contained the highest site-wide aquatic invertebrate concentrations, which resulted in many metals failing the statistical test in the No Name Creek drainage.

The sample size for small mammal samples was insufficient to make a statistical comparison. The sample mean concentrations for each site were compared to a value three times higher than the background sample mean to preliminarily identify metals of potential concern. Following this approach, small mammals showed elevated mean concentrations of selenium at South Rasmussen Drainage, the South Dump, and the Luxor Dump. All other metal constituents were below the preliminary threshold value.

6.2 CONCLUSIONS

6.2.1 *History*

Rhone-Poulenc began mining at the South Rasmussen Ridge Mine in January 1991. The South Dump was mined and reclaimed by 2001. Mining in the Central Pit was initiated in 1997 and partially reclaimed in 2003/2004.

6.2.2 *Surface Water*

No Name Creek and South Rasmussen Drainage are both intermittent creeks that flow only in the spring for approximately three months as a result of snowmelt and Spring rains. During the rest of the year there is no flow in either creek.

In the headwaters of No Name Creek, no constituents exceeded the dissolved-phase surface water quality standards. The monitoring stations in No Name Creek at and below the mine pits exceeded the dissolved-phase surface water quality standards for cadmium and selenium. The selenium concentrations were low and the associated selenium loads also were low. Daily loads were generally less than 0.2 lbs/d except for a few days during the peak runoff.

There is a pump-back system in the SWRPs at South Rasmussen Drainage, which prevents surface water from flowing past the lease line. The monitoring stations in South Rasmussen Drainage frequently exceeded the dissolved-phase surface water quality standard for cadmium, nickel and selenium. The selenium concentrations were moderate and the flows were low. As a result, the associated selenium loads also were low. Daily loads were generally less than 1.0 lbs/d except for a few days each year, during peak runoff.

There are several intermittent springs and seeps in both drainages; several of them flow only for a few weeks in the Spring. Generally these springs have elevated constituent concentrations; however, because the flow is so low, the constituent loads are also low.

6.2.3 *Groundwater*

The water quality in the alluvium wells in No Name Creek Drainage is generally good. No wells exceeded the

dissolved-phased groundwater quality standards for metals; MW-2 exceeded the sulfate and TDS standards. The volume of alluvial groundwater is also low in the lower reaches. MW-2 measured water only for a few months and MW-3 has been dry for over eighteen months.

The alluvial groundwater in South Rasmussen Drainage exceeded the dissolved-phase groundwater quality standards for aluminum, arsenic, manganese and selenium in several wells. Total aluminum, arsenic, beryllium, manganese, iron, selenium, sulfate, and TDS exceeded groundwater standards in one or more wells and sampling events.

No dissolved-phase constituents were above the groundwater standards for any of the constituents throughout the sampling period in the bedrock wells completed in the Wells Formation, the Dindwoody Formation or the Cherty Member. Several total constituents were detected above the groundwater standards during several monitoring events; the acidic-preservation technique may be impacting these results.

6.2.4 *Conceptual Site Model*

There are two potential source areas of constituents of concern at the site: the South Dump and the Luxor Dump. Both of these potential sources areas contain central waste shales that weathers and releases constituents, particularly selenium, to the environment.

Snow accumulated on the dumps melts in the Spring and runs off or infiltrates into the surface of the dumps. The water then picks up the soluble constituents and migrates as overland flow and interflow through preferential flow paths just below the surface of the dumps. The water flows toward No Name Creek and South Rasmussen Drainage, impacting surface water and alluvial groundwater. Some of the infiltrated water migrates through the dumps and into the bedrock formations where it is attenuated.

The constituents that have been measured in the surface water and groundwater are primarily from the South Dump. The Luxor Dump is contributing only minor amounts of selenium and other constituents. Because of the way the Luxor Dump was reclaimed and because it is in the Central Pit, it has limited flow paths to No Name Creek.

1.0 INTRODUCTION

This Data Summary Report (DSR) presents a summary of the field and analytical results that were collected during the 2011 field season at the South Rasmussen Ridge Mine (SRRM). This DSR is being submitted in accordance with the *Additional Reclamation Activities Directed, Plan Required Within 30-Days* letter from the United States Department of Agriculture Forest Service (USFS) and the United States Department of Interior Bureau of Land Management (BLM) dated April 15, 2008. As part of this engagement letter, Nu-West Mining, Inc. and Nu-West Industries, Inc. (jointly Nu-West) agreed to implement a Supplemental Reclamation Action (SRA) at the SRRM Site. As detailed in the above-referenced April 15, 2008 letter, Nu-West is required to conduct site investigations for two years (2009 and 2010), technology evaluation for one year (2011) and commence implementation of a remedy in 2012, in a "process equal to that outlined in the National Contingency Plan [NCP]". Nu-West initiated the SRA investigative work at the Site in 2008 with a surface water and spring monitoring program. Nu-West has completed the site investigation and supporting characterizations. The 2009 investigation results were presented in the *DRAFT 2009 Data Summary Report*, dated January 25, 2010 and the 2010 results were presented in the *DRAFT 2010 Data Summary Report,* dated November 8, 2010. The *Existing Site Conditions Report* (ESCR) was submitted on May 12, 2011 and presented the Site data up to that time. Although Nu-West has followed and will continue to follow the processes outlined in the NCP in planning and conducting this study, Nu-West has titled this study, as noted above, at the request of the USFS and BLM in its letter dated April 11, 2011.

Nu-West submitted the *2011 Final Sampling and Analysis Plan for Remedial Investigation and Feasibility Study* (a.k.a. SAP Work Plan dated April 20, 2011). Comments have not been received on the SAP. In a letter dated July 27, 2011, TRC on behalf of Nu-West, submitted a sediment sampling and analysis plan for additional sediment characterization on the South Rasmussen Drainage. The BLM provided comments on the plan on August 29, 2011.

1.1 Purpose

The purpose of this report is to summarize the 2011 data in a concise manner to supplement the ESCR and to discuss any additional significant findings.

1.2 Site Location

The SRRM is located in Caribou County, Idaho, approximately 19 air miles northeast of Soda Springs, Idaho (Figure 1-1). The mine Site consists of two mine pits (a central pit and a south pit), two external waste rock dumps (northern and southern), two growth media storage areas located west of the central pit, and the mine office and shop area located on the northeast corner of the south pit (Figure 1-2).

4.0 SUMMARY AND RECOMMENDATIONS

4.1 Summary

Data from 2011 were collected in accordance with the 2011 Sampling and Analysis Plan. Samples of sediment, surface and groundwater were collected as part of the program. All the field and laboratory data were reviewed and verified in accordance with the Quality Assurance Project Plan. The field and laboratory data met and exceeded the quality assurance objectives. Any data that had quality assurance issues or footnotes were flagged as appropriate.

Records for the 2011 water year were obtained for the Somsen Ranch SNOTEL station. During water year 2011, a total 34.5 inches of precipitation was measured at the weather station, 7.2 inches above the average of 27.3 inches (26.4% above average). Approximately 15.0 inches of the moisture was in the form of snow that accumulated which was approximately 15% above average.

Surface water flow measurements were made in No Name Creek, South Rasmussen Drainage and springs throughout the runoff season. Measured flows were higher in 2011 than those measured since 2008. Total selenium concentrations were similar those observed in previous years.

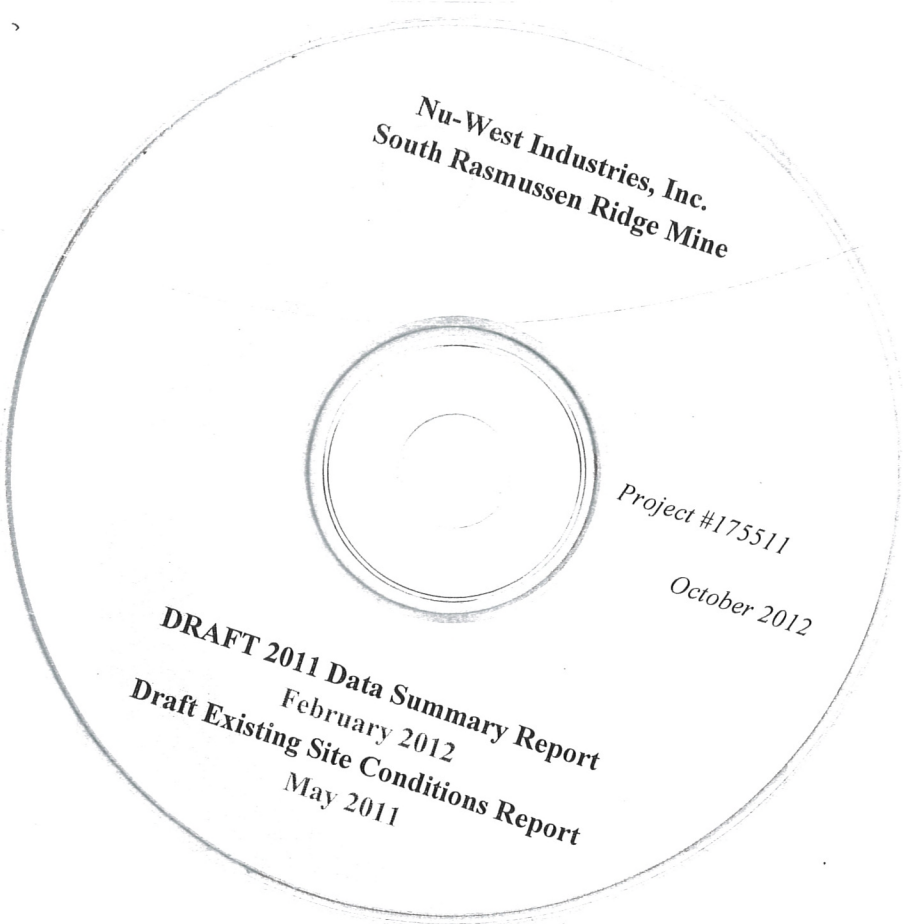
Groundwater elevation in the alluvial wells quickly rose in the spring then slowly declined through out the summer and several alluvial wells went dry. Groundwater elevations in the Dinwoody Formation decreased during the winter then started rising in the spring and rose throughout the summer. Groundwater elevation in the the Wells Formations well rose over 8 feet during the course of the year.

In general, selenium and other constituent concentrations in the alluvial ground water wells were consistent with previous years.

Additional sediment samples were collected from selected areas in the SRD to determine if the sediment could act as a secondary source of contaminants after the South Dump is reclaimed. Results showed that after site closure, selenium, manganese, and other metals may leach for a significant period of time from the near-surface sediments. Additional soil sampling and testing may be considered at successively greater depths to develop a vertical profile of soil concentrations and leaching results.

4.2 Recommendations

- Additional flow and water quality samples should be collected to collect additional baseline data to support the FMTE project. A Sampling and Analysis Plan for 2012 will be submitted detailing the proposed program.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South Rasmussen Ridge Mine
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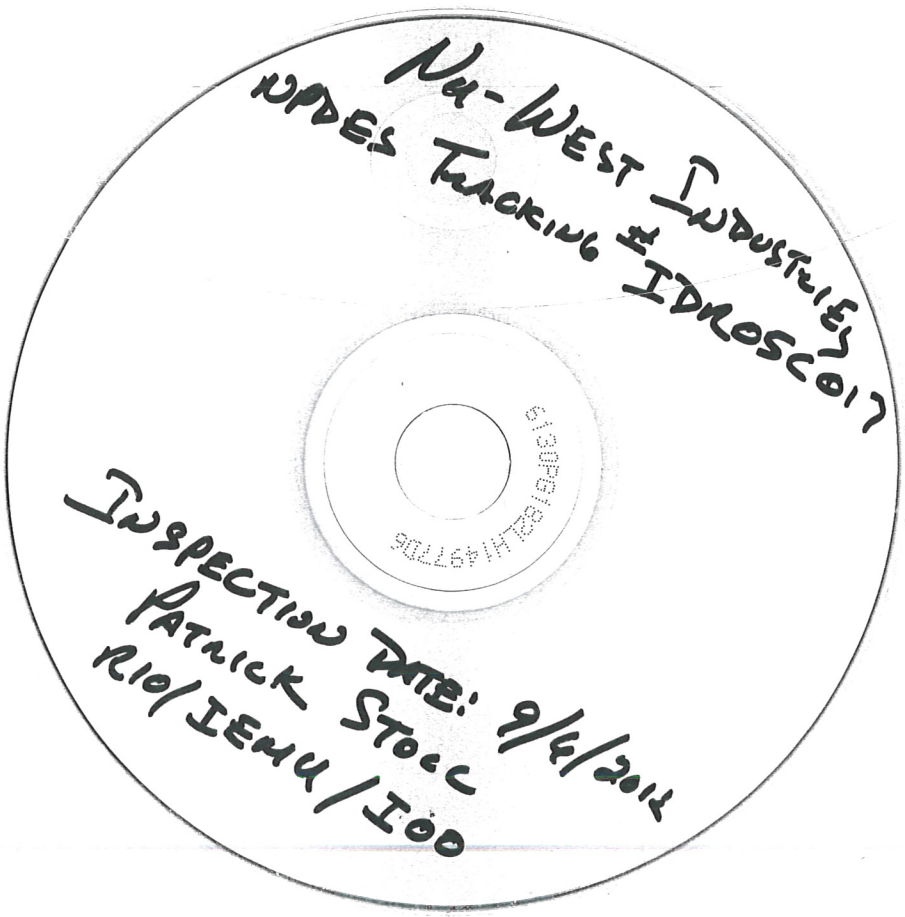
Nu-West Industries
NPDES Tracking #IDR05C017
Inspection Date: 9/4/2012
Patrick Stoec
RIO/IEMU/IDO